

MONTANA FISH AND GAME DEPARTMENT
FISHERIES DIVISION

1969. SUMMARY OF CLARK CANYON - BEAVERHEAD RIVER PROJECT

A fishery biologist was hired in February 1969 for the Clark Canyon - Beaverhead River Project. He was present until early August, after which the project was assumed on a part-time basis by another biologist who had other responsibilities in the district. Initial time was spent obtaining necessary equipment for field surveys and reviewing literature pertaining to a study of this nature. Field work began in March.

Study areas in 1969 included Clark Canyon Reservoir, the Red Rock River (a main reservoir tributary), and the Beaverhead River. A summary of data obtained from each area is presented below.

Clark Canyon Reservoir

A preliminary evaluation of reservoir fish populations was conducted with the use of trap nets. This netting was carried out in the months of June, July, August and October. The predominate species captured were suckers (both white and longnose) and burbot. Suckers and burbot comprised 50 to 79 percent and 21 to 48 percent, respectively, of the total catches. Seasonal differences in the distribution of these species probably occur. Rainbow and brown trout percentages ranged from 0.4 to 2.1 percent. Mountain whitefish and carp were also present but in limited numbers.

Temperature data were obtained in July and August. On July 24, a thermocline occurred between 25 and 30 feet below the surface, but was not apparent on August 25. Surface temperatures reached 22.9°C. on August 25, and ranged to 15.9°C. at 78 feet on the same date. Water samples for dissolved O₂ determinations were obtained on July 1 and 29 and on August 11 and 25 at a depth of 60 feet. Parts per million of dissolved O₂ were 6, 4, 2, and 1.5 for the respective dates. Determinations on July 29 at 20, 40, 60 and 70 foot depths showed 8, 6, 4 and 3½ ppm of dissolved O₂ present, respectively. Chemical analyses failed to detect the presence of H₂S at depths of 70, 60, and 40 feet on the same date. Although a noticeable odor was present below the dam in late August, no detectable H₂S occurred in water samples obtained from the outlet. Total alkalinity (M.O.) determinations ranged from 200 to 240 ppm and total hardness (CaCO₃) from 210 to 240 ppm at two stations in July.

To evaluate fish distribution in deep water, two 125-foot by 6-foot experimental gill nets were fished overnight at depths of 65 and 69 feet on August 10 and at 56 and 60 feet on August 25. There were no fish captured in these overnight sets. Dissolved O₂ determinations showed 4 and 2 ppm present at the two depths, respectively, on August 10 and 1.5 and 2.5 ppm present, respectively, on August 25. Apparently the low amounts of dissolved O₂ limit the use of this portion of the reservoir by all species.

Three experimental gill net sets were fished overnight in June. Of 527 fish captured, white and longnose suckers accounted for 92.6 percent, burbot 3.6 percent and rainbow and brown trout 3.4 percent of the catch. A concentration of suckers was observed in the reservoir on June 3. A two-hour gill net set in this area caught 38 white suckers, most of which were mature ripe males.

Young-of-the-year fish were sampled with a 100-foot by 10-foot seine with $\frac{1}{4}$ -inch bar mesh. Six seine hauls at various sites around the reservoir on August 18 produced a young-of-the-year catch of 3766 suckers, 3 burbot, 1 rainbow trout and 1 whitefish. Fifty-three rainbow, averaging 7.7 inches in total length, were also captured and assumed to be a part of the subcatchable plants made in June and July. Two adult white suckers and one adult burbot were taken along with 45 white suckers ranging from 4.1 to 7.1 inches. On August 29, five seine hauls captured 769 young-of-the-year suckers, 8 older suckers, 1 adult burbot, and 10 rainbow trout. The trout averaged 8.8 inches in length. The fish population of this reservoir is predominately rough fish which are capable of reproducing successfully in this environment.

Red Rock River

An estimate of the trout population in a 5500-foot section, located about 2 miles upstream from the mouth of Red Rock River, was made in August. The objective was to evaluate the status of the trout population during a non-spawning period. Brown trout predominated and comprised 91 percent of the yearling and older trout population. Rainbow trout was the other major trout specie present. A normal size distribution was present in this section with age groups I through V represented. Over 200 trout were tagged to evaluate possible movement into the reservoir.

Beaverhead River

To evaluate trout populations in relation to water flows, two sections were electrofished below the dam for estimates of population sizes and age structures. These sections have been shocked each year since 1966. Estimates of population parameters will be made from this data for comparison with previous years.

An approximately 2-mile long section immediately below the dam was electrofished in October. Forty-four brown trout and 12 rainbow trout were captured in the single run. There were no young-of-the-year trout observed and few yearlings were captured. An extensive kill occurred in this area when heavy emissions of H₂S were occurring. Apparently this area is still unsuitable trout habitat.

Taylor thermographs were placed at three locations on the Beaverhead River to obtain temperature information from June through September.

Recommendations

It is recommended that fish population surveys to determine distribution and relative abundance of both game and non-game species be continued on the reservoir, reservoir tributaries, and Beaverhead River.

Additional shocker sections should be established on the Beaverhead River.

An intensive limnological study to include chemical, physical, and biological information is necessary to evaluate the effect of the reservoir on the Beaverhead River. Limnological information is needed to evaluate the relationship between O₂ depletion in deeper water and fish movement and/or distribution in the reservoir. Stream morphology on the Beaverhead River should be measured with respect to various flow patterns. Information on fisherman use and catch rates on the reservoir and Beaverhead River are needed to better evaluate the fishery.

Prepared by Ron Marcoux

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